

HIBISCUS SP. (MALVACEAE), A NEW HOST FOR PECTINOPHORA ENDEMA COMMON (LEPIDOPTERA: GELECHIIDAE) AND PYRODERCES FALCATELLA (STRAINTEN) (LEPIDOPTERA: COSMOPTERIGIDAE) AND THEIR EFFECTS ON PREDISPERSED SEED

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Abstract

An undescribed *Hibiscus* sp. (Malvaceae) on Cape York Peninsula, Queensland is recorded as a larval host for *Pectinophora endema* (Lepidoptera: Gelechiidae) and *Pyroderces falcateLLa* (Lepidoptera: Cosmopterigidae). This is an extension of the known range for *P. endema*. Both species pupate in separate parts of the *Hibiscus* fruit and destroy as much as 66% of the predispersed seed crop.

Introduction

Several taxa of Malvaceae have been recorded as larval hosts for Lepidoptera which feed on the seed and pupate within the fruit capsule (Sands and Hill, 1982; Common, 1958, 1990). Previous studies have mainly concentrated on *Pectinophora gossypiella* (Saunders), the pink bollworm, and *P. scutigera* (Holdaway), the pink spotted bollworm (references in Vickers, 1982). One or more species can be present in any one fruit of various Malvaceae (Sands and Hill, 1982). Apart from recording the presence of different species from different hosts little has been published on the effect of these larvae on seed production in the hosts, or on the ability of different larvae to coexist in the one fruit.

In June 1989, a number of larvae were observed feeding on seeds in young to mature fruits of an undescribed *Hibiscus* sp. on Cape York Peninsula, Queensland. Two Lepidoptera were reared from these fruits and an estimate is made of the predispersed seed killed by these larvae.

Study Area and Methods

An undescribed *Hibiscus* sp. [Forster 5234, Vouchers at BRI, CANB, QRS] (section *Furcaria* DC.) occurs at Maloney's Springs, "Bromley" Station, Cape York Peninsula (12°28'S 142°55'E) on sandy soil in open forest dominated by *Eucalyptus tetradonta* and *Erythrophloeum chlorostachys*. It has been recorded south to the Laura area (L.A. Craven & F.D. Wilson, pers. comm. 1989).

Plants of this *Hibiscus* sp. are erect, scabrid, spiny shrubs to 2.5 m in height, and several hundred plants occurred in an area of 1-2 ha at Maloney's Springs. In 1988 the annual wet season was early and poor and by June plants had died back to perennial root-stocks. In 1989, there was a longer wet season and plants were still in full flower and had well-developed fruit from the 1989 summer to autumn flowering.

Large numbers of Lepidopteran larvae were present in the fruit and dissection indicated that they were feeding exclusively on the developing seed. Infested fruiting capsules (50) were collected and transported back to Brisbane to allow the emergence of adults, which occurred in late August 1989.

The number and location of pupal cases in each fruit, the number of seeds per fruit and the percentage of seeds destroyed by the larvae were recorded.

Results

Two species of moths emerged: *Pectinophora endema* (Gelechiidae) [Forster 89602, UQIC] and *Pyroderces falcatella* (Cosmopterigidae) [Forster 89601, ANIC, UQIC]. It should be noted that *Pyroderces* is in need of revision in Australia (E. Nielsen, pers. comm. 1990).

Larvae of *P. endema* pupated within the carpels of the fruit whereas those of *P. falcatella* pupated outside the carpels in an area of long yellow, stellate hairs that occurs between the carpels and the perianth. In a number of instances, there were holes in the carpel walls indicating that larvae had chewed through these.

All larvae enter the seed via the micropyle. While there was some evidence of abortive feeding on the testa surface away from the micropyle, no evidence of entry via the testa was observed. Only fully-developed seed were eaten.

A maximum of 15 seeds may occur in fruits of this 5-carpelled *Hibiscus* sp. with 2-3 seeds per carpel. Pupae of *P. endema* were more common (mean 1.42, range 0-4) than pupae of *P. falcatella* (mean 0.57, range 0-4). Sixty-six percent of seed set in the capsules was destroyed (testa penetrated and seed eaten wholly or in part) by the feeding of the two species with an average destruction of 9.93 seed per capsule (range 0-15 seed destroyed).

Discussion

Hibiscus diversifolius Jacq., *H. divaricatus* R. Grah. and *H. heterophyllus* Vent. are hosts of *P. endema* (Common 1958, 1990) and the *Hibiscus* sp. reported here, represents a new host record. Common (1958, 1990) records *P. endema* from central Queensland to central New South Wales and this collection from Cape York Peninsula is the first published record for the region.

The *Hibiscus* sp. reported here is the first host plant record for *P. falcatella*.

Seed predation by various insects may vary considerably between different hosts in the same environment (Auld, 1983) and on the same host in different localities and seasons (Randall, 1986). It must be expected that the 66% of predispersed seed recorded here is an

example of what these two Lepidoptera can achieve in one season. Certainly in many years (e.g. 1988), this species of *Hibiscus* is not available for as long a period. The relationship between the two Lepidoptera in this species of *Hibiscus* is unknown, however, the differing requirements for pupation would indicate some degree of compatibility.

Acknowledgements

Miss M.A. Schneider arranged the identification of *P. endema* by Mr E.D. Edwards and *P. falcatella* by Dr E.S. Nielsen, both C.S.I.R.O. F.D. Wilson, U.S.D.A. and L. Craven, C.S.I.R.O. advised on *Hibiscus* taxonomy. Assistance in the field was given by Messrs G. Kenning, D.J. Liddle and M.C. Tucker. Dr M.P. Zalucki commented on the manuscript.

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